

# Scaling Sustainability: Textile Innovation and Industry Spotlight

Presented By:

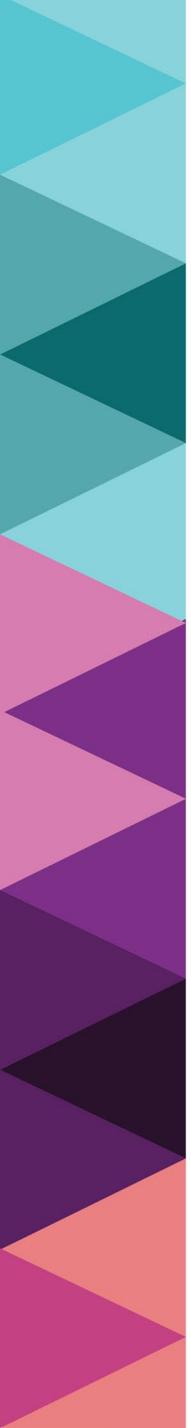
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**W O M E N**  
IN TEXTILES SUMMIT

- 
- Current trends in circularity and sustainability
  - Challenges in scaling sustainable innovations
  - Resources for sustainable innovation research and scaling
  - Industry Spotlights:
    - Cloud 9/Ocean State Innovations
    - The Manufacturing Solutions Center
    - Standard Textiles

# State of Textile Waste, Disposal, Reuse, Consumption

- Less than 1% of all textiles are recycled into clothing
- 25% of textile waste is reused or recycled
- 75% of textile trash is disposed in landfills globally
- The textile, apparel and fashion industry ranks second globally for water consumption
- Post-pandemic, disposable PPE is now an area of growing concern for the environment including increased microplastics

Ellen MacArthur Foundation, 2017. A New Textiles Economy: Redesigning Fashion's Future. <https://www.ellenmacarthurfoundation.org/publications>.



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# Trends in Research and Development: Circularity, Sustainability, Ethics and More

- Circular Products
  - Reuse of textile waste to create new products
- Biodegradable Textiles
  - Use of natural or engineered fibers
- Responsible Design, Cut, and Sew
  - Zero-waste cut and sew techniques
  - On-demand designs to cut down on over production
  - 3D design and printing
- Use of AI and Data Analytics
  - Help predict trends, optimize production and aid with understanding consumer behavior
- Increase in Ethical Practices
  - Fair labor practices, safer working conditions, transparency with supply chain
- Sustainable Dyeing and Finishing
  - Use of natural dyes and pigments
  - Low-Impact Dyeing Innovations: waterless dyeing, lower dye temperatures required



# Scaling and Implementation Barriers

- According to a 2024 Textile Exchange Study, only 34% of companies in North America reported implementation and use of sustainable (natural, biodegradable, etc.) fibers and raw materials.
- The 2024 Textile Exchange Study was administered to brands and retailers



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# Materials Sourced Globally



## Fiber Use Distribution

- Cotton – 80%
- Polyester- 55%
- Nylon- 20%
- Wool- 37%
- Viscose <1%
- Textile-to-Textile Feedstock <1%

# Scaling and Implementation Barriers

- Delayed legislation from North America
- Low consumer awareness in certain demographics
- Knowledge and technology gaps in basic textile processing from brands and researchers
- Uniform feedstock stream
- Limited infrastructure for collection, sorting and processing

# Resources for Translation of Sustainable Innovations

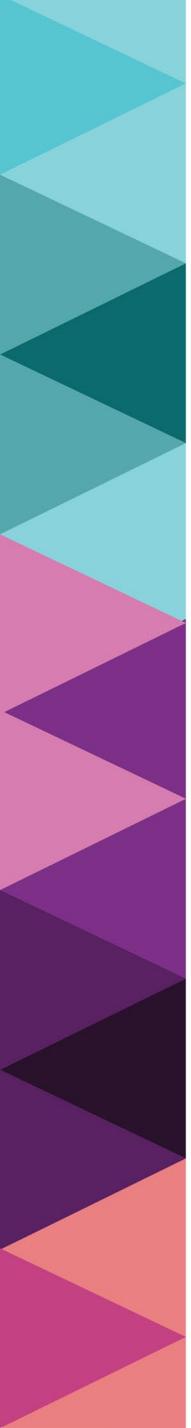
## NC Textile Innovation & Sustainability Engine

### Engine Partners:

- The Industrial Commons (lead)
- Material Return
- NC State University Wilson College of Textiles
- Manufacturing Solutions Center
- Textile Technology Center at Gaston College
- Western Piedmont Community College
- NC IDEA
- NC Commerce

## What We Do

- Research & Development
  - Product Testing and Prototyping
  - Conduct Industry Led Case Studies
  - Life Cycle Analysis Research
- Translation/Scalability Work
  - Use of Engine partners to scale research into production with the use of domestic supply chain
  - Translational work in: sorting, fiber, yarn, woven fabric, knit fabrics, and more
- Workforce Development
  - Apprenticeship and internship opportunity for high school and college students
  - Workforce development programs for industry including: micro-credentials, certificates and more
- Resource Road Mapping
  - Network mapping of domestic resources for textile manufacturing
  - Industry consortia for hemp technologies and circularity



# Industry Spotlight



# CLOUD9

## FABRICS

organic cotton. happy you. happy earth.

- WHO WE ARE
- WHY ORGANIC
- OUR EVOLUTION
- THE FUTURE



# MANUFACTURING SOLUTIONS CENTER



- Testing
- Sourcing
- Knitting R&D
- Product Development
- Education/Training
- Industry Connections



NORTH CAROLINA  
**TEXTILE ENGINE**  
INNOVATION & SUSTAINABILITY



### Take-Back Recycling Pilot

ENVIRONMENTAL SAVINGS



35 properties



6,080 lbs of textiles were diverted from landfills in 2022



5,800 lbs were diverted in 2023



**11,880 total pounds of linens were saved from being discarded into landfills**



### Reduce, Reuse & Recycle



Standard Textile Takes on “Planet vs. Plastics” Challenge by Eliminating Poly Bags from US-Made Products

